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FURTHER MEASURES OF δ EQUULEI, O Σ 535.

In a note on this interesting binary star published in number 79 of these *Publications*, I gave two measures made in May, 1901, which showed that the distance between its two components was increasing, after the close approach observed in the autumn months of 1900. The pair was closely followed by Professor HUSSEY and myself until December 19th of last year, and our observations left no doubt of the fact that the distance between the components reached a maximum value of about $0''.15$ in June, 1901, and then slowly diminished until in November and December it was so small that the combined disk gave only the slightest indication of elongation when examined with the highest-power eye-pieces of the 36-inch telescope.

My first opportunity to observe the star this year under fairly good conditions came on morning of June 8th. At that time it was certain that the image was elongated, though the distance was too small to make the measure of the direction of elongation very accurate. Since that date Professor HUSSEY and I have measured the pair on a number of nights, and have found the distance to be increasing until it has become a fairly easy pair to observe with the 36-inch on good nights. At the time of my last observation the two components were distinctly separated at moments, and the distance between their centers was certainly as great as $0''.15$.

My observations to October 31, 1901, have been published in Lick Observatory Bulletin No. 11. Those made since then are as follows:—

Date.	Position-Angle.	Distance.	Eye-piece.	Seeing.
1901.833	Elongation too slight for good measures.	2400	3
.852	$194^{\circ}.5$	$0''.05 \pm$	2400	4
.967	No certain elongation.	$< 0''.05$	2400	4
1902.433	$70^{\circ}.0 \pm$	< 0.10	1900/2400	3
.597	$35^{\circ}.7$	0.10	2400	3
.638	$38^{\circ}.3$	0.12	2400	4
.684	$33^{\circ}.6$	0.14	1900	3
.753	$34^{\circ}.2$	0.13	2400	3
.788	$36^{\circ}.6$	0.14	2400	3
.794	$34^{\circ}.9$	0.17	1500	3

On the three nights in 1901, Professor HUSSEY was with me. We examined γ *Equulei* immediately after making our measures on the second night. Its image was perfectly round at the best moments, and when distorted by atmospheric disturbances, the slight apparent elongation was nearly perpendicular to the position-angle measured for δ *Equulei*. On the third night, after examining δ *Equulei*, we turned at once to

Pegasi. The elongation in this pair was unmistakable, though, from measures made here and elsewhere, it is certain that the distance was not over $0''.08$. On these nights as on the others when we examined this star together, we used every precaution to make our work independent. When measures were made, one would make the settings, the other read the circle and record, so that the observer could know nothing about his measures till they were completed and on record. On several nights a third person read the circle and recorded for both observers.

From the observations made here since the summer of 1899, it is safe to conclude that the revolution period of 5.7 years which Professor HUSSEY found from his study of the orbit, is very close to the truth. It also appears that the plane of the orbit is not exactly in the line of sight, but that the apparent motion is in a very narrow ellipse. The inclination of the orbit plane probably is as great as 80° , but to determine this and the remaining elements of the orbit with precision will require careful and continuous measures during the next three years.

R. G. AITKEN.

November 13, 1902.

THE *LEONIDS* OF 1902.

Watch for *Leonids* was kept by the writer during the nights of November 14th and 15th, a total number of nineteen being seen on the first night and twenty-nine on the second. Except for the moonlight, the general conditions were very favorable. A few light clouds came over at times, but they were not enough to affect seriously the count of meteors. The observer's attention was fixed on the Sickle, and all meteors which certainly emanated from the radiant were counted as *Leonids*, doubtful cases being classed with those which were surely not *Leonids*. In brightness, the *Leonids* observed